

PAARA



Graphs

MARCH 1988

FLEA MARKET TIME!

**THE OFFICIAL NEWSLETTER
OF THE PALO ALTO AMATEUR
RADIO ASSOCIATION**

AND

THE MENLO PARK C.D. AMATEUR RADIO CLUB

1988 CLUB OFFICERS

President	Gerald Tucker	WA6LMV	326-4908
Vice-President	Andy Korsak	VE3FZK	366-5228
Secretary	Bill King	N6CHI	595-8258
Treasurer	Lily Anne Hillis	N6PGM	325-5484
Trustee, W6OTX	Fred Canham	K6YT	948-9238
Property	Ed Fairbanks	W6AIM	322-8319
Co-Property/Badges	Fred Canham	K6YT	948-9238
Refreshments	John Buonocore	KD6ZL	366-1658
ARES Officer	Steve Stuntz	K6FS	322-4952
Club Historian			

BOARD of DIRECTORS

Craig Smith	N6ITW	1987-88	326-8637
Gerry Wagstaffe	N6NIR	1987-88	325-4678
Perry Yelton	NR6E	1987-88	366-9481
Dusty Doster	K6MPN	1988-89	368-8156
Steve Stuntz	K6FS	1988-89	322-4952
Chuck Johnson	nc	1988-89	488-258-4857

PAARAgaphs Staff

Editor	Chuck Johnson	nc	488-258-4857
Advertising	Swede Swenson	N6CHL	368-8583
Mailing	Bill McElhinney	KA6LZI	325-9808

PAARA POLICIES

Membership in PAARA is \$6.00 per calendar year which includes a subscription to PAARAgaphs. Make payment to the Palo Alto Amateur Radio Association, P.O. Box 911, Menlo Park, CA 94026

Club Net 147.45 MHz Mondays 8:30 PM

Meet on the first Friday of each Month at the Menlo Park Recreation Center at 7:30 PM,

Send PAARAGRAPHS correspondence to:

Chuck Johnson, EDITOR
3309 Mt. Logan Drive
San Jose, CA 95127

● BULLETIN ●

March 1988

From The Editor's Desk

FLEA MARKET IS HERE! SEE YOU THERE ON MARCH THE 12TH!! Do pitch in as this is a great event. Have a good March & see you next month. -73 de Your Editor.

Speaker of the Month:

JUDE DAGGETT — President, Counter Surveillance Systems Inc., of Palo Alto (a technically oriented non-ham). Fresh from a well-received talk at another South Peninsula ham club, Jude will present his program about SURVEILLANCE & COUNTER SURVEILLANCE TECHNIQUES and their relations to ham radio. Jude will present a demo and will distribute a 25-page report on the technology of the field, relating to the monitoring of signals.

Be sure to take advantage of this opportunity to gather intelligence from this unique guest speaker on FRIDAY MARCH 4TH!

DINNER WITH THE SPEAKER: Su Hong's Restaurant, on El Camino, Menlo Park at 6:15 PM, prior to the meeting on Friday the 4th!

— Info provided by Andy VE3FZK, PAARA
Program Chairman

PRESIDENT'S CORNER

An appeal for help at the PAARA Foothill Flea Market, March 12th netted a few solid confirmed contacts and a few more "I'll be there but don't count on me" contacts. In any case I hope we can refine our list of assigned jobs, at the next meeting. Remember, "the harder you work the more fun you have." We are the vanguard event for the new regime at the Museum so we want our internal effort to be well organized to at least minimize the confusion.

Are we having fun yet? You betcha! Last month the PAARA Board worked up an initial swag at an annual calendar. It should be published elsewhere in this issue. Please give us feedback on what you want to see here. We chose to list both events that members would be involved in as individuals and those that we sponsor or support as a club.

Although it might look like it, we haven't tabled the issue of closing out and summarizing the 1986 and 1987 Treasurer's Books. After a couple of false starts we have located some more volunteer help for this and will have more information soon. Meanwhile, Lily Anne Hillis W6PGM is marching ahead with a simplified system and, at least from 1 January forward, will be able to provide us with an internally consistent summary.

My public congratulations to our V.P. VE3FZK for continuing to field an excellent line of speakers.

de WA6LNV

CALENDAR de PAARA

Meetings: March 4th - March General Meeting / March 9th - March Bd. Mtg.
(current) April 1st - April General Meeting / April 6th - April Bd. Mtg.

Activities: Mar. 5-6 = ARRL DX Contest Phone
(current) Mar 12 = Foothill (PAARA) Flea Market
Mar. 26-27 = CQ WW Prefix Contest Phone
Apr. 22-24 = Visalia Int'l DX Convention
Grosvenor Holiday Inn, Visalia CA
Reservations (209) 651-5000
Apr. 29-May 1 = Dayton Hamvention, Dayton Ohio

PAARA EVENTS: Mar. 12 Flea Market (Foothill College)
May 22 Spring Picnic (W6VG QTH)
June 25-26 Field Day
Oct. 8 Ampex Auction
NOVEMBER: PAARA Officer Nominations at Nov. Gen. Mtg.
DECEMBER: PAARA Officer Elections at Dec. Gen. Mtg.
DECEMBER: PAARA Officer Installations at the
PAARA Christmas Dinner

THE CLUB TICKET : W6OTX

AMATEUR RADIO LICENSE		NOT TRANSFERABLE		
EFFECTIVE DATE 01/12/88	EXPIRATION DATE 12/29/97	CALL SIGN W6OTX	OPERATOR PRIVILEGES CLB	STATION PRIVILEGES CLB
NAME AND ADDRESS PALO ALTO AMATEUR RADIO ASSN INC FRED F CANHAM 691 CASITA WAY LOS ALTOS CA 94022		FIXED STATION OPERATION LOCATION 333 RAVENSWOOD AVE MENLO PARK CA		
		SXB:BAR		
THIS LICENSE IS SUBJECT TO CONDITIONS OF GRANT ON REVERSE SIDE				
UNITED STATES OF AMERICA FEDERAL COMMUNICATIONS COMMISSION GETTYSBURG, PA 17325				
FCC FORM 880 JULY 1984		FEDERAL COMMUNICATIONS COMMISSION		

Fred F. Canham
(LICENSEE'S SIGNATURE)

-- Above document provided by Fred K6YT, PAARA W6OTX Club Station Trustee, for Info.

PAARA BRIEFS

- * Thanks to W6APZ Rich Stiebel the club now has about 10 years' worth of IBM punched cards for the annual auction's buyer ID's ! - Info de VE3FZK Andy
- * THE highlight of the February Meeting on 2/5 was that it coincided with the 39th Birthday of PAARA Member Dusty K6MPN. The Club presented Dusty with a special personalized Birthday Card in recognition of the event. To top it all off Dusty walked away from the meeting with a raffle prize. Fine Business! -Ed.
- * ROB KA6JLT reports that the "450 Gang" on 28.450 10 Meters, Tuesdays and Thursdays at 9PM will be running computer generated CW for practice at 25 WPM & lower!!
- * PAARA will be introducing Ham Radio to Kay Knott's Menlo Park Blind VA Group on Monday 8 February-- It is envisioned that in addition to familiarizing the group about amateur radio, it will also be possible to link-up to ham organizations in the home QTH's of the blind hams in training after they return from the Menlo Park VA facility. A Station at the VA QTH is a future possibility as well. Steve K6FS will keep the club posted on this very worthwhile community service effort!

ERI '88 / NOTES DE CRAIG SMITH N6ITW

The Emergency Response cadre for the Santa Clara Valley Section holds its ERI (Emergency Response Institute) this month on 26-27 March. Those Emergency Response personnel involved have booked this event well in advance amongst themselves, to better manage their varied Emergency Response Missions. PAARA's Craig Smith N6ITW (DEC for San Mateo County) says "it's the most important 2-day event that we have throughout the section." Craig's comments on this happening will be included in a forthcoming issue of PAARAGRAPHS! -Ed.

Amateur Action Line de WA6LIJ

1. Why don't we have a treasurer's report in PAARAGRAPHS? Other clubs do.
2. Why don't we have a treasurer's report at meetings? Other clubs do.
3. We often hear about "well attended Board Meetings where significant actions were passed." Why not publish Board Minutes in PAARAGRAPHS so that the rest of us can learn what is going on in OUR club? Other clubs do.
4. Why not authorize the Prize Chairman to spend \$50 per meeting so we can have one major prize such as a call book or Hand Book plus some less expensive prizes? Other clubs do.

I can hear many say: "Don't rock the boat. After all PAARA has survived 50 years without knowing what is going on in our club. Why change?" Indeed if complacency and disinterest is the will of the majority then I say: "Open your ranks because here comes another one."

QST DE ROD KB6ZV

DIRECTOR'S REPORT
FEBRUARY, 1988
Rod Stafford, KB6ZV
Director, Pacific Division

A major development for the Int'l Amateur Radio Union (IARU) during 1987 was the growing probability of an ITU Conference that could have authority to reallocate spectrum. The probability is that this could occur in the 1992-93 time frame. The ITU is the International Telecommunications Union. It is made up of representatives from all of the governing radio agencies in the member countries. So, the FCC is the representative from the U.S. Other countries send their equivalent to the FCC to the ITU meetings.

Every decade or so there is a major World Administrative Radio Conference (WARC) which undertakes to completely review, and sometimes revise, the ITU Radio Regulations. The last General WARC took place in 1979. In between the General WARCs there are specialized WARCs which deal with the problems of particular services. When these specialized WARCs occur, they do not have the authority to make changes which would affect other services not represented at the particular specialized WARC. In recent years, 1987 included, these specialized WARCs have found it increasingly difficult to solve their spectrum problems within the framework of the Radio Regulations adopted at WARC 1979. The HF Broadcasting WARC and the Mobile WARC were both held in 1987 and both conferences ended with a call for the ITU to schedule a competent WARC no later than 1992 to look at certain portions of the spectrum which are experiencing some problems. Whether the 1992 WARC will be a full-fledged General WARC which examines the entire Table of Frequency Allocations or a limited General WARC examining only certain problem areas won't be known until the ITU holds its Plenary Conference in May, 1989.

At the present time, we know of some of the problem areas. The HF Broadcasters in foreign countries believe they cannot solve their frequency problems within the allocations set at WARC 79. That is, the sum of all channel-hours desired by HF Broadcasters far exceeds the channel-hours available under the 1979 allocations. The HF Broadcasters want more frequencies and according to Richard Baldwin, W1RU, the current IARU President, the HF Broadcasters are particularly anxious to obtain additional allocations in the 7 MHz vicinity.

Richard Baldwin also sees the UHF and microwave frequencies vulnerable as there's a multitude of new uses and users of these portions of the spectrum and there is real difficulty in finding room in the existing spectrum to accommodate these new uses and users. The amateur allocations in the 420-450 MHz portion and above 1200 MHz will be under severe pressure from other services who will want at least a part of those allocations.

What needs to be done to prepare for the WARC in 1992? Each member society of the IARU (in the U.S., the ARRL) should make sure that its telecommunications administration is made aware of the value of amateur radio, that each administration knows the needs of the amateur service in its country and that each administration supports its amateur radio service at the WARC.

The ARRL is working on the preparation for the WARC, if it should occur. At its recent Board of Directors meeting in January, 1988, the Board approved setting aside \$105,000. to establish a "Fund for the Defense of Amateur Radio Frequencies." This will fund needed travel to

and from conferences and meetings over the next couple of years at which the ARRL can make contact with other IARU member societies in order to prepare for the WARC. It will no doubt be a lot of work and expensive but it is a very important task and one that every amateur ought to be aware of.

FCC General Docket No. 87-389 constitutes a wholesale revision of FCC Part 15 of the FCC Rules. These rules govern the interference potential of RF devices of all types. The effort in the proposed rewrite is to limit the categories of RF devices to two groups: unintentional radiating devices and intentional radiating devices. The proposed Rules would simplify the maximum permitted field strengths from the two categories so that it is easy to determine, when examining any given device, what the limitations on its operation and interference potential are. ARRL staff has studied the proposed new rules and has concluded that the RF levels, which are in essentially all cases higher than those permitted by the existing rules, would permit harmful interference to amateur transceivers and should not be adopted. At the January, 1988 ARRL Board of Directors meeting, the Board directed Counsel to file comments in this proceeding emphasizing that intentionally radiating devices should NOT be permitted in the amateur bands and that those devices categorized as unintentionally radiating should be bound by the current maximum level of RF emissions. The comment deadline in this proceeding is March 7, 1988.

Ray Kowalski, just before he left the FCC, sent an interesting letter to two groups in Southern California both of whom claimed to be valid frequency coordinators for the 220 MHz band. Kowalski gave them both the task of cooperating with one another for the joint coordination of 220 MHz repeaters in their area. See just how helpful the FCC can be. All you have to do is ask!

The ARRL and the Amateur Satellite Corporation (AMSAT) have jointly expressed interest in participation in the Space Station planned by NASA in the 1990's. Benefits: promoting favorable public awareness, performing radio experiments, furnishing morale communications for the crews, and in general, providing backup communications capability. Modes would include real time voice and data transmissions with ground-based amateur stations, and video downlinks to portable demonstration stations in schools, youth camps, and to other gatherings.

As a part of its work in coming up with some revised methods of teaching amateur radio to young people, the Education Task Force categorized all of the school radio clubs that are registered with the ARRL. Here's the breakdown:

Four year college/university clubs.....	65
Two year college or technical school....	13
High schools.....	20
Junior high schools.....	8
Elementary schools.....	4
Misc. (can't tell from name).....	6
Other (4H, Explorers, etc.).....	5

It would appear there is plenty of room for growth in this area! Would your club consider sponsoring a high school or college amateur radio club at campus nearby? I'll bet you'd find there would be several people to take your club's next Novice class. Til next month, 73.

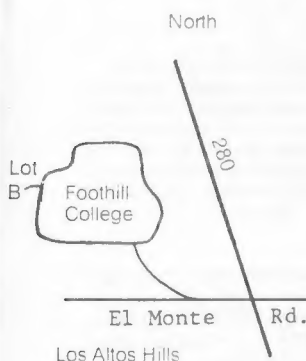
Presenting the Peninsula's Largest Electronic Flea Market at Foothill College!!!



- Come to Foothill College, Los Altos Hills, California
- Saturdays 8 am - 2 pm ● Parking Lot "B"
- Sellers \$7.00 per vehicle (2 SPACES)
- BUYERS FREE!!! ● Support your local
Non-Profit Electronics Organization
- Refreshments Served!
- Novice thru Extra Exams Given, Info. 408-255-9000

Locator Map:

DATE/SPONSORED ORGANIZATION:



March 12, 1988

Palo Alto Amateur Radio Association

April 9, 1988

Amateur's Donation to Palo Alto Red Cross

May 14, 1988

Electronic's Museum Amateur Radio Club

June 11, 1988

SPECS Users Group

July 9, 1988

Perham Foundation

August 13, 1988

Southern Peninsula Emergency Communication System

September 10, 1988

Foothill's Amateur Radio Society

NEED MORE INFO?

Call Anytime on: 144.67/145.27 mhz ● SPECS Repeater

ABC'S OF RTTY 6 *

Baudot Code(continued).

Therefore, a Baudot ITY machine has two special keys, one labeled FIGS and another labeled LTRS, and each letter key(LTRS) also serves as a number or punctuation character when in FIGS case. The old Baudot machines had only three rows of keys and took a little getting used to for a typist! Fortunately, modern electronic keyboards have an electronic memory built-in that automatically inserts the LTRS and FIGS character when required. A "standard" typewriter keyboard may therefore be used on these electronic terminals. An obvious limitation of the Baudot code is that it cannot represent both upper- and lower-case letters. In the U.S., ITY machines print only upper-case, or capital letters. In Europe some machines print only lower-case letters.

There are two slightly different versions of the Baudot code in common use by radio amateurs. The two codes are the same for all letters, numbers and control characters, but they have a few differences for punctuation symbols. In the United States we use a code that was used in the surplus ITY machines we started with in the late 1940s. This code is not the international standard, but is compatible in most respects. Either code is equally legal for U.S. amateur use, since the FCC only defines code combinations for letters, numerals, and the slant or fraction bar in Part 97.69 of the Rules and Regulations. Amateurs in other countries have adopted the Comite Consultatif International Telegraphique et Telephonique(International Telegraph and Telephone Committee), CCITT#2 Code. Both codes are shown in Table 3.

As can be seen, there are only six FIGS case differences between the two Baudot codes, the most noticeable being the interchanges of the signal bell and apostrophe symbols (FIGS-S and FIGS-J). Communications between U.S. and European amateurs therefore may include extra signal bell rings! Devotees of RTTY art therefore include both the apostrophe and signal bell is needed to make up the picture. The variations between quotation(") and plus(+) and between semicolon(;) and equals(=) do not normally cause any great problems except when receiving press from commercial RTTY stations outside the U.S. The apostrophe symbol(') is generally used for quotation in CCITT#2 systems, which of course will ring the U.S. station's signal bell. The only way for a U.S. station to get absolutely correct copy in this case is to have a printer or terminal that can be changed to the CCITT#2 code. As will be discussed shortly, the definition of ANTOR/SITOR by Comite Consultatif International des Radiocommunications(International Radio Consultative Committee), CCIR 476, specifically requires conversion to the CCITT#2 code format. This is why the OVER signal for ANTOR may be referred to as either quotes-querie("?-U.S. Baudot) or plus-query (+?-CCITT#2 Baudot).

The FIGS-D character deserves some special consideration. In the U.S. this code is used to represent the dollar sign(\$). However, CCITT#2 systems use this code to trigger a Who Are You (WU) answer-back message. When FIGS-D is received and WU is enabled, the CCITT#2 terminal automatically transmits the call sign or other ID, thus blocking any reception until the WU message is completed.----to be continued-----

*Prepared & Written
By Harry Wijtman AE6M, Part 6 of 12.

.64 HEIST: IT'S A CRIME

by Rich Hartens, KA6UOE SCVRS Newsletter

On Tuesday, February 9, 1988, Packet Radio data observed by Hank, W0LRI indicated that with the Tuesday, 12:50 a.m. automatic Packet Radio NET/ROM check of active nodes on 144.91 MHz, W6WSH-2 was suddenly missing.

A few hours later on the same day at 5:30 a.m., the customary wake-up time for the W6WSH 2 meter repeater, the airwaves remained silent. The 442.9 MHz W6WSH/R machine was also not heard. A few Loma Pioneer Radio Club members in need of high level 2-way started drifting over to .76, curious as to which circuit breaker had popped at the Loma Pioneer Radio Club site.

The day wore on. About 2:30 p.m., George, K6TAM, and Art, W6JIA, arrived at the .64 site on Mt. Loma Prieta -- a site shared with commercial FM broadcast transmitters KWSS and KLRS.

An important discovery was made. The repeater was missing!

It was a radio burglar, and about \$12,000 worth of Amateur Radio gear was missing -- and with it, years of blood, sweat, and tears:

STOLEN FROM THE LOMA PIONEER RADIO CLUB

QTY	CALL	FREQ	DESCRIPTION	FUNCTION	SERIAL NUMBER
1 EA	W6WSH/R	442.9 MHZ	MOTOROLA MICOR	REPEATER	201C6N
1 EA	W6WSH/R	146.64 MHZ	MOTOROLA MICOR	REPEATER	TDL1693E1
1 EA	W6WSH-2	144.91 MHZ	MOTOROLA HITREX	DIGIPEATER	433HZE
1 EA	W6WSH-1	441.5 MHZ	KENWOOD TH401A	DIGIPEATER	401164
1 EA			ACC RC-850	CONTROLLER	589
1 EA			ACC RC-85	CONTROLLER	952
2 EA			MFJ 1270	TMC	

Cary, N6GSF, President of the Loma Pioneer Radio Club, requests that all our readers be on the lookout for this stolen equipment. Please keep, copy, and post this page in all the right places. It is further requested that any INFORMATION REGARDING THIS THEFT OR THE LOCATION OF THIS STOLEN EQUIPMENT BE REPORTED TO:

TELEPHONE: 408 867-9715 Weekdays 8 to 4
408 299-2622 24 Hours

CASE NUMBER: 88-1913A

AGENCY: SANTA CLARA COUNTY SHERIFF'S OFFICE - WEST SIDE STATION
ADDRESS: 14374 SARATOGA AVENUE
SARATOGA, CA

Old Salts Never Dry Up de WA6LIJ

Recently Sy, WA6ROM, and I were having one of our usual "Highly technical and intellectual conversations" and the question arose "If you were standing on a Pacific Ocean beach how far away is the horizon?" We are both ex-sailors of the US Navy and after much discussion Sy found the answer in the book "Piloting Seamanship and Small Boat Handling by Charles F. Chapman", p. 419 in my 1965/66 edition. Distance to horizon in miles equals $6/7$ of the square root of the height of the eyes in feet above sea level or:

$$\begin{aligned} \text{Miles to horizon} &= \frac{6}{7} \sqrt{\text{Height of eyes in feet}} \\ \text{eg. Miles to horizon} &= \frac{6}{7} \sqrt{5.6 \text{ feet}} \\ &= 2.03 \text{ miles for a typical person.} \end{aligned}$$

Now let's suppose a sailor from Hawaii is approaching this same beach. How far away from the beach will he be when he sees the eyes of the person on the beach? Since both can see the horizon at 2.03 miles the distance will be 2 x 2.03 or 4.06 miles. Now let's apply this equation to antennas. My QTH elevation is 180 ft. and my 2 meter antenna is 50 ft. above the ground or 180 + 50 = 230 ft above sea level. So $6/7 \sqrt{230 \text{ ft.}} = 13$ miles. Thus my signal, barring obstacles, could reach a floating handy talky 13 miles away. How about a repeater on Mt. Diablo at 3,849 ft. elevation? A line of sight signal could be received at sea level 53 miles away. Or 182 miles if I were in an aircraft at 45,000 feet.

This brief analysis sure points out the value to amateur radio of such phenomena as skip, ducting and reflection.

This same book also contains some "vital" information should you talk with descendants of my ancestors in their native German. For example the unlaut letter o or b is - - - and the unlaut u is - - - in CW. In Spanish the k is - - - in CW. (Hi)

WORLDWIDE DISTRIBUTION



HAM RADIO OUTLET

NEW OAKLAND LOCATION

6 STORE BUYING POWER

ICOM IC-R71A

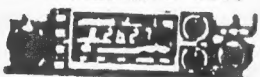


Superior Grade General Coverage Receiver

\$799

SALE! CALL FOR PRICE

ICOM IC-37A



IC-27A (1250-200 F.M.)

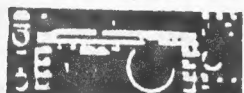
IC-27H (1400-200 F.M.)

IC-37A (1250-2300MHz F.M.)

IC-47A (1250-700 F.M.)

CALL FOR LOW, LOW PRICE

ICOM IC-735



The Latest in ICOM's Long Line of HF Transceivers

CALL FOR LOW, LOW PRICE

ICOM IC-R7000



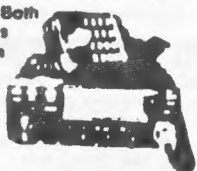
25 MHz-1300 MHz

IN STOCK FOR IMMEDIATE DELIVERY!

ICOM LATEST EDITION

IC-3200A DUAL BANDER

Covers Both 2 Meters & 70 cm



AT GREAT LOW, LOW PRICES

ICOM IC-1271A

NEW



12 GHz Transceiver
The First Full-featured
1240-1300 MHz Transceiver
AT GREAT LOW, LOW PRICES

ICOM

HAND-HELDS

VHF/UHF



IC-02AT
IC-04AT



IC-2AT
IC-4AT



IC-3AT

CALL FOR LOW,

LOW PRICE

All Major Brands in Stock Now!



Bob Ferrell (800) 854-6046
President
Ham Radio Outlet
PO Box 1000
San Diego, CA

ANALOGUE, CA 90001
2020 W. La Brea
(714) 961-3013 (714) 960-7000
Between Channing & Orange Grove
SAN FRANCISCO, CA 94100
300 Howard Ave
(415) 347-5757 (415) 347-5757
5 miles south on 101 near SF

OAKLAND, CA 94600
210 Livingston St
(415) 550-5757 (415) 550-5757
May 17 to 2nd Ave East
SAN DIEGO, CA 92100
5375 La Jolla Village Rd
(619) 560-0000 (619) 560-0000
May 10 to 11th Ave East

PHOENIX, AZ 85015
1702 W. Camelback Rd
(602) 247-3515 (602) 247-3515
East of Hwy 17
VAN NUYS, CA 91401
6705 Van Nuys Blvd
(818) 708-7777 (818) 708-7777
San Diego Freeway at Valley Blvd



CALL TOLL FREE (800) 854-6046

Not valid for shipping & handling. Phone toll free 9:30 a.m. to 5:30 p.m. Pacific Time. California and Arizona customers call toll free. Hours: California and Arizona residents please add sales tax. Prices 1 week before. Quantity discounts subject to change without notice.



ELECTRONICS FOR HOME OR WORK . . .
 YOU NAME IT . . . WE'VE GOT IT!
QUEMENT IS THE PLACE!



Larsen Antennas
 The Amateur • Professional

TELEX hy-gain
 TELECOMMUNICATIONS, INC.

YAESU
The radio.



HUSTLER



**QUEMENT
 ELECTRONICS**



1000 SO. BASCOM, SAN JOSE
 998-5900 • Open Mon.-Sat. 9-6



• ANTENNAS • HAM GEAR • CITIZEN'S BAND • COMMERCIAL AND INDUSTRIAL
 PARTS SUPPLY • SERVICE DEPARTMENT • COMPUTERS AND SOFTWARE
 • COMPLETE STEREO HI/FI DEPARTMENT.

PAARA
P.O. Box 911
Menlo Park
Ca. 94026



Andy Korsak VE3FZK
504 Lakemead Way
Redwood City CA 94062

First Class